

3.17 Secondary and Cumulative Impacts

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3.17.1 Secondary Impacts

The CEQ defines secondary impacts as “those that are caused by an action and are later in time and farther removed in distance but still foreseeable.” These impacts are induced by the initial action.

The SR 509: Corridor Completion/I-5/South Access Road Project is consistent with local and regional land use plans that have already addressed growth (*King County Comprehensive Plan: Final Supplemental Environmental Impact Statement*, 1994; *City of SeaTac Comprehensive Plan: Final Environmental Impact Statement*, 1994; *Greater Des Moines Comprehensive Plan: Final Environmental Impact Statement*, 1995; *Federal Way Comprehensive Plan: Final Environmental Impact Statement*, 1995; *City of Kent Comprehensive Plan: Final Environmental Impact Statement*, 1995). These documents are incorporated in this FEIS by reference. A similar level of projected growth is expected to occur in the project area with or without the project. Although the proposed project would support and facilitate planned growth, it would not induce growth. Additionally, there are no specific future development activities currently known that would be dependent on the project and would not proceed without the proposed project. Therefore, no secondary impacts are expected to result from the SR 509: Corridor Completion/I-5/South Access Road Project.

3.17.2 Cumulative Impacts

Cumulative impacts are those that have an “impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions” (40 CFR 1508.7). The cumulative impacts of an action may be undetectable, but can add to other disturbances and eventually lead to a measurable environmental change.

The cumulative impacts evaluation for this FEIS includes the transportation improvements shown on Figure 2.3-3 for the No Action Alternative in conjunction with the proposed project. These projects are assumed to be operational in the year 2020. The cumulative impacts discussion also includes the following projects:

- Sea-Tac Airport Master Plan development, including the third runway and SASA
- Sea-Tac Airport Noise Remedy Program
- Des Moines Creek Technology Campus

- City of Des Moines Pacific Ridge Neighborhood Improvement Project
- City of SeaTac CBD
- City of SeaTac Aviation Business Center
- City of SeaTac 24th/28th Avenue South Arterial
- Des Moines Creek Basin Plan

These projects have already been, or will be, subject to separate environmental reviews; analysis of their specific impacts is not included in this FEIS.

In a broad sense, all impacts on affected built and natural environment resources are cumulative. However, CEQ guidelines recommend a narrowing the focus of the cumulative impacts analysis to important issues of national, regional, or local significance so as to “count what counts.” These issues of importance were identified through public and agency scoping, comments received during public meetings, coordination with local jurisdictions, resource agency participation in the project through the NEPA/SEPA/Section 404 Merger process, and comments received on the Revised DEIS.

For the SR 509: Corridor Completion/I-5/South Access Road Project, the cumulative impacts analysis focuses on surface water quality, fish and fish habitat, and wetlands because of their heightened importance in the Puget Sound region, and on residential displacements and relocations because of their importance on a local level, as identified through the public and agency involvement described above.

Several comments on the Revised DEIS pertained to the combined effects of airport and roadway noise. A detailed noise study was conducted for the preferred alternative, as required by FHWA (Appendix I of this FEIS). This study evaluated traffic noise exposure throughout the project corridor by utilizing forecasted 2030 traffic volumes with and without the project. Therefore, the cumulative effects of traffic noise were inherently taken into account by considering the effects of growth in traffic volumes with the proposed project in place. Additionally, the detailed noise study included 24-hour noise monitoring at locations along the proposed project alignment where current noise from aircraft flights at Sea-Tac Airport is significant. The cumulative effects of airport and traffic noise were considered by using the current background noise levels as the baseline and determining future noise levels by combining predicted future traffic noise levels from the proposed project with the measured airport noise levels. Therefore, cumulative noise is not addressed in this section of FEIS.

A number of comments on the Revised DEIS pertained to air quality. An air quality conformity analysis was conducted for the preferred alternative using the latest regional planning assumptions, including emission factors and an analysis year consistent with those used in PSRC’s MTP adopted in 2001 (*Destination*

2030) and its subsequent revisions (Appendix H of this FEIS). PSRC's modeling demonstrates the proposed project would conform to the regional air quality maintenance plans. *Destination 2030* assumes substantial transit, freeway, and arterial improvements within the SR 509 project area. The analysis methodology inherently includes the cumulative effects of transportation emissions of planned transportation improvements. Therefore, cumulative air quality impacts are not addressed in this section of the FEIS.

Based on the public and agency communications described above, no other elements of the environment were identified as issues of national, regional, or local significance.

The geographic limits of the project area for the cumulative impacts evaluation for surface water quality, fish and fish habitat, and wetlands are the five stream basins in which the proposed project is located: Miller Creek, Des Moines Creek, Lower Puget Sound, Mill Creek, and Lower Green River. The project area for displacements and relocations is the Cities of SeaTac, Des Moines, and Kent.

Surface Water Quality

Rivers streams and lakes in the project area have been extensively altered by development during the past century. The riverbed of the Lower Green River has been lowered and channelized for flood control purposes. Early last century, the Green River lost a significant source of its water with the diversion of the Cedar River to the south end of Lake Washington to supply water for the ship canal and locks between the lake and Puget Sound, and diversion of the White River to the Puyallup River.

Streams within the project area have also undergone considerable change. Most of the development within the stream basins has occurred in the past 50 years. There have been some declines in the quality of the streams. These include the typical pollutants associated with urban development—nitrogen, phosphorus, oil and grease, coliform, bacteria, and detectable levels of some herbicides and pesticides. However, the more serious and pervasive effects upon streams have been physical. Direct stream impacts resulting from past development include bank armoring and widening for flood control. In the past, it was common practice to route a stream into an underground culvert for hundreds or even thousands of feet to pass under a highway or developed property.

Streams now typically experience higher peak flows than they historically did. As a result, channel scouring and widening are common. Channel scour and bank erosion often lead to heavy sedimentation in low-gradient and downstream sections, particularly at stream mouths.

By the 1970s, there was recognition among the state and local agencies that some form of stormwater controls for new development was needed. Since then,

several stormwater management plans, guidelines, and regulations have been issued, including the *Puget Sound Water Quality Management Plan*; the King County *Surface Water Design Manual*; and the Department of Ecology *Stormwater Management Manual for the Puget Sound Basin*, which has recently been revised. Implementation of these stormwater regulations and policies assures that the rate of hydrologic and water quality degradation in developing areas will be greatly reduced from those that historically occurred.

Because stormwater regulations will continue to evolve, future water resource conditions in the project area are difficult to predict. Even with implementation of stormwater treatment and detention measures for all new development, increases in pollutant loads and adverse changes in existing hydrology to streams within the project area are likely to occur in streams within the project area.

The proposed project is located in five drainage basins: Miller Creek, Des Moines Creek, North Lower Puget Sound subbasin, Mill Creek, and Lower Green River. Each of these basins and subbasins lie completely within the designated UGBs of one or more jurisdictions. Because UGBs entirely cover the basins, full development can be expected to occur in the future. According to Ecology's Section 303(d) list (1998), Des Moines Creek, Mill Creek, and some reaches of the Green River do not meet Washington State water quality standards for selected parameters. Des Moines Creek is listed as a 303(d) water because of high fecal coliform bacteria concentrations. Green River is listed as a 303(d) water because of exceedances of mercury, fecal coliform, chromium, and temperature. Mill Creek is listed as a 303(d) water because of exceedances of temperature, dissolved oxygen, and fecal coliform.

Des Moines Creek basin will have the greatest percentage of high-density land uses, as designated by applicable comprehensive land use maps; which suggests a higher cumulative impact for the Des Moines Creek basin than the other basins. Approximately 35 percent of the basin is currently covered with impervious surfaces that drain to the steam system, well above the 10 percent impervious area threshold at which streams in the region typically start to show obvious signs of serious degradation. At buildout, urban development is expected to increase the impervious surface area in the basin to over 47 percent, an increase of 12 percent (Des Moines Creek Basin Committee, 1997). However, implementation of the flow control projects identified in the Des Moines Creek Basin Plan will reduce peak flows in Des Moines Creek, compared to existing conditions.

Based on local comprehensive plans, the Mill Creek and Lower Green River basins will have the least high-density development in the future, thereby incurring the least cumulative impacts. Miller Creek Basin and North Lower Puget Sound Subbasin are quite similar with respect to future land use, and will have a moderate amount of high-density uses in the future, resulting in fewer

cumulative impacts than the Des Moines Creek Basin, but more than the Mill Creek and Lower Green River basins.

Two of the largest projects currently proposed in the area are the SR 509 Corridor Completion/I-5/South Access Road and Sea-Tac Airport Master Plan improvements, including the SASA and new third runway. Together, these projects would contribute approximately 4 percent to the expected increase in impervious surfaces in Des Moines Creek basin, and 2 percent in Mill Creek basin (CH2M HILL October 2001, FAA and the Port of Seattle, 1996).

Fish and Fish Habitat

The GMA requires all cities and counties in the state to conduct planning for growth and protection of sensitive areas, and has more extensive requirements for the largest and fastest-growing cities and counties in the state. By requiring definition of Urban Growth Areas, the GMA relieves development pressure on urban areas that generally contain the most viable fish habitat. King County and the Cities of SeaTac, Des Moines, Kent, and Federal Way have adopted sensitive areas ordinances that include the protection of wetlands and streams, with more stringent protection for streams that provide salmonid habitat. These ordinances establish restrictions on disturbance of aquatic habitat, including stream disturbance, wetland filling, and buffer encroachment.

The federal ESA established a legal framework to protect species considered to be in danger of extirpation. There are two classifications under which a species may be listed: Species determined to be in imminent danger of extinction throughout all of a significant portion of their range are listed as “endangered.” Species determined likely to become endangered in the foreseeable future are listed as “threatened.”

Two fish species occurring within the project area have been listed under the ESA: Puget Sound chinook salmon was listed as threatened in March 1999, and the Coastal-Puget Sound DPS of bull trout was listed as threatened in October 1999.

A year after the chinook salmon listing, Section 4D rules were published by the NMFS, which among other things, dictate control of stormwater and protection of streams and lakes that form habitat for wild chinook. This has had the short-term effect of expanding federal review over many types of development formerly subject only to local review. It is likely that over the long term, modifications to the 4D Rule and the development of habitat conservation plans will lead to a more streamlined approval process than is currently the case. It is clear that community land use plans and major development projects must specifically weigh potential impacts on streams and fish and be prepared to demonstrate adequate off-setting mitigation.

Agencies including the NMFS and WDFW have tracked population trends for anadromous salmonids. Although fish populations naturally fluctuate in response to factors such as climate variations, nearly all native salmonid populations in the region have undergone a severe declining trend since the human population began rapidly increasing over the past century.

Detailed information on the current state of fish populations and habitats is provided in Section 3.7 and the *Draft SR 509: Corridor Improvements/I-5/South Access Road Biological Assessment* (Shapiro & Associates, 2001).

Within the project area, the high rate of population and employment growth has driven the recent trend in adverse impacts on fish and fish habitat, primarily through habitat degradation. The effectiveness of regulatory protection for fish and fish habitat in counterbalancing the effects of projected growth in the project area cannot reliably be assumed. As discussed in the previous section, creating new impervious surfaces associated with development is a predictor of fish habitat degradation. Des Moines Creek Basin will have the greatest amount of high density development and Mill Creek and Lower Green River basins will have the least.

Capital improvement projects identified in the Des Moines Creek Basin Plan include fish passage improvement at Marine View Drive, which is the major fish barrier in the Des Moines Creek system, as well as fish passage improvements at the Midway Treatment Plant, and measures to stabilize the flow regime of Des Moines Creek. These improvements, together with planned stream restoration and riparian zone enhancement, would improve anadromous fish access and habitat within the Des Moines Creek system.

Wetlands

Wetlands have not been recognized historically for their ecological importance. Many of these areas were filled, dredged, or developed to make the land useful for housing, industry, and agriculture. Between 1780 and 1980, the state of Washington lost an estimated 31 percent of its wetlands. Since that time, wetlands have been identified as providing important economic and environmental functions, such as protecting floodwaters, filtering sediment and pollutants, and providing spawning areas for commercially important fish and habitat for many important species of plants and wildlife.

In 1989, Washington adopted state goals for no net loss of acreage or ecological function of wetlands. These goals reflect the Clean Water Act, federal legislation that prohibits the discharge of soil into waters of the United States unless authorized by a permit issued under Section 404 of the Act. The USACOE has authority over such actions and requires the permittee to restore, create, enhance, or preserve nearby wetlands as compensation for the damage. This means of compensatory mitigation is intended to comply with the general goals of the Clean Water Act and the specific goal of “no net loss” of wetlands.

Several regulations have been enacted on a federal and local level to achieve these goals. King County, and the Cities of SeaTac, Des Moines, Kent, and Federal Way have adopted sensitive areas ordinances that include the protection of wetlands and their associated buffers.

Urbanization is the primary cause of wetland loss within the central Puget Sound region and the project area. According to a 1998 WDNR publication, more than 90 percent of the wetlands in urban areas in Washington have been lost. Despite the goal of “no net loss,” studies show that these goals are not being met. The magnitude of impacts on wetland functions is unknown. Primary wetland functions lost in the project area are due to an increase of impervious surfaces, which reduces aquifer recharge and alters wetland hydrology, and a decrease in overall wetland area and functional capability. These functions primarily include fish and wildlife habitat, stormwater retention, and sediment and toxics retention.

Future trends in wetland regulation are likely to focus on compensatory mitigation requirements. Regulatory agencies are expected to develop procedures to track the success and completion of mitigation efforts as this focus of mitigation efforts is moving towards emphasizing the replacement of wetland functions, rather than replacement of wetland area. In addition, research and publications show strong indication that mitigation banking is becoming a more favored means of mitigating wetland loss.

In evaluating cumulative impacts on wetland resources, there is a general correlation between increased urbanization and loss of wetland area and functions. As urban areas approach full build-out, there is not only direct loss of wetland area and function, but lack of suitable wetland mitigation sites. This lack results in a greater tendency toward out-of-basin and out-of-kind mitigation that does not replace the loss of wetland function within the watershed. Within the project area, this impact is greatest within the Miller Creek and Des Moines Creek basins because of the combined impacts of several large projects, most notably the Sea-Tac Airport Master Plan improvements, including the new third runway and SASA, which would have a combined wetland impact of approximately 18.4 acres (Parametrix 2001).

If cumulative impacts on large, high quality wetland systems were weighted most heavily, impacts would be expected to be greatest in the Lower Green River Basin, which has the greatest number of high quality wetlands in the project area, and least in the Des Moines Creek basin.

Displacement and Relocation

Cumulative displacement and relocation impacts would be related to the additive effects of displacements related to this project and other area projects: the 28th/24th Avenue South Arterial construction, the Seattle-Tacoma International Airport Third Runway, and the Port of Seattle’s Noise Remedy

Program. The Port of Seattle has already removed a number of single-family and multifamily residences within the Noise Remedy Program acquisition area, primarily in the City of SeaTac.

The *Final Environmental Impact Statement for Proposed Master Plan Update Development Actions at Seattle-Tacoma International Airport* (Port of Seattle 1996) has identified 391 single-family displacements, 260 multifamily displacements, and 117 business displacements associated with the Third Runway. Displacements resulting from the Third Runway project would occur mainly to the west of Sea-Tac Airport and would be caused by construction of the runway. Some businesses located south of South 188th Street and east of Des Moines Memorial Drive would be displaced because of their location within the future third runway's RPZ.

The *Final Environmental Impact Statement for the 28th/24th Avenue South Arterial* has two preferred alternatives listed—Alternative 3 and Alternative 5 (Ficklin 1993). The City of SeaTac has confirmed that a final design for 28th/24th Avenue South is not available at this time; the final design for later phases (farther south) will proceed following the final design of SR 509 so that City engineers can best determine how to connect the two projects (Gut pers. comm. 2000). According to the Final EIS, as many as 26 single-family residences could be displaced. Approximately half of these identified displacements are within the footprint of the proposed SR 509 alternatives.

The Port of Seattle, according to FAA noise mitigation policy (Part 150), has committed to relocating all of the mobile homes in the Homestead Park neighborhood as part of their current noise mitigation plan, with relocations occurring within the time frame concurrent with construction of the proposed project. Approximately half of these mobile homes would otherwise be in the footprint of the SR 509 project. The airport mitigation plan is independent of the proposed project and is based on current and future noise levels and the ability to mitigate certain types of residences from higher noise levels. The relocation of the mobile homes would represent a loss of generally affordable housing options.

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